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Consider the equation

$$f_c = f_u - A\ddot{f}_u - B a , \qquad (1$$

where "f_c" and "f_u" denote force measurement six-vectors 74 and 71, corrected and uncorrected for inertial errors, respectively; where "a" denotes acceleration six-vector 73; where "A" and "B" denote the six by six constant matrices 68 and 69, and where the number of dots placed over an instance of a variable quantity denote the order of time derivative with which the variable is taken in the instance. Equation 1, then, closely approximates the calculations of Fig. 5 subject to the bandwidth limitation intentionally placed on all variables.

It has been determined empirically that matrices "A" and "B" may be found such that "f_c" very much more closely approximates the true unknown applied force "f" than does "f_u". It is also demonstrated in the hereinafter presented analysis, that this is a reasonable expectation. Where, as for the calibration measurement vectors, the applied force "f" and the desired estimate of it "f_c" may both be taken to be zero, we have the